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STEP High Level Libraries and STEP Space Viewer

NASA's STEP for Aerospace Workshop

January 25-27, 2000

Jet Propulsion Laboratory
Pasadena, CA - USA

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- ESPRI CONCEPT and SIMULOG
- The STEP High Level libraries approach
- The STEP Space Viewer
- Summary



ESPRI CONCEPT and SIMULOG

- Espri Concept merging into Simulog, September 1999
- Turn-over 1999 : 100 MF
- staff : 200
- 5 offices in France : Paris, Sophia-Antipolis, Cannes, Toulouse, Grenoble
- Capital: FF 36.5 million
- Shareholders :
 - CDC INNOVATION 26 %
 - THOMSON-CSF VENTURES 19 %
 - INRIA 16 %
 - FINANCIÈRE DE BRIENNE (DGA) 14 %
 - INNOVEN 6.5 %
 - FINNO 6 %
 - INNOVACOM (FRANCE TELECOM) 4 %
 - PERSONNEL AND MANAGEMENT 8.5 %
 - (50% of the personnel are shareholders)

A focused strategy

Serving manufacturers and companies offering high tech services:

- Automotive
 - Aerospace and Defense
 - Electronics
 - Energy
 - Telecommunications and Internet Services ("E-Services")
- In the design cycle for their products, services, and systems:
- Engineering simulation
 - Engineering data management and Internet-Intranet solutions
 - Engineering critical systems

For EDMS / Internet-Intranet Engineering, we offer...

- A complete set of services:
 - Architecture and performance issues for engineering information systems
 - Custom development (industry-specific EDMS, technical databases, ORACLE, OBJECTSTORE...)
 - Deployment and integration of EDMS and engineering information systems (WINDCHILL, AGILE, DOCUMENTUM....)
 - Application maintenance for third-party products
 - Technical support and training
- Expertise in Internet-Intranet environments (CORBA, JAVA, EJB...) and data exchange formats (STEP, XML...)
- distribution of STEP Tools Inc. Products in France



For Engineering Simulation, we offer...

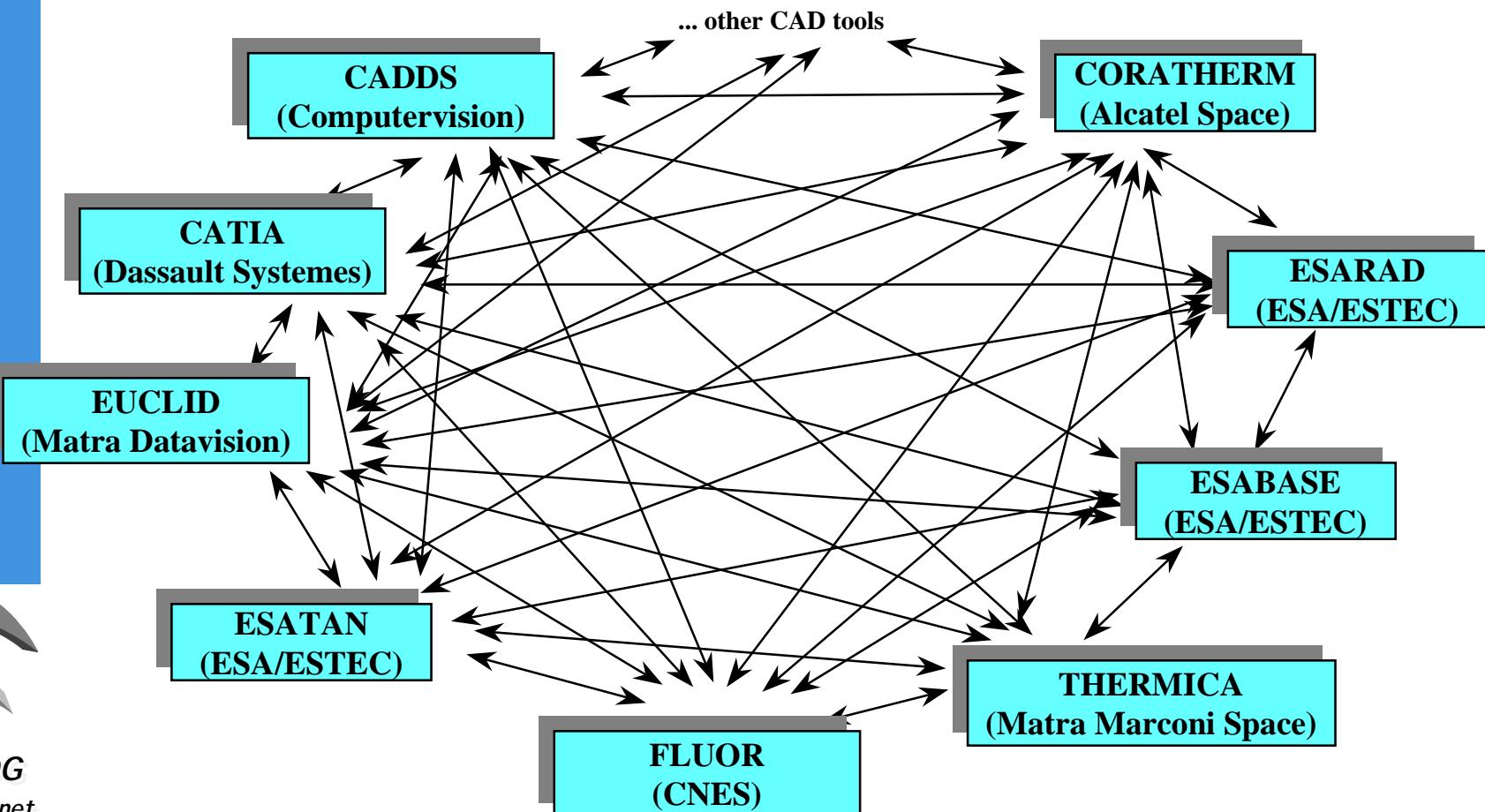
- **A complete set of services:**
 - Analysis (fluid mechanics, thermal, neutron, electromagnetism)
 - Custom development (linking CAD/mesh generation, system simulators, 2D/3D simulators,...)
 - Application maintenance and reengineering for third party products
 - Technical support and training
- **A complete line of products:** Mesh generation (Tetmesh), Post-processing (EnSight), Fortran software engineering (Foresys), industry-specific solvers
- **A powerful environment for simulator integration:** OML - Open Modelling Laboratory

For Engineering Critical Systems, we offer...

- A high value-added product:
 - Esterel Studio, a software development platform for embedded systems (real time, codesign..)
- Consulting on performance issues and additional services:
 - Improving the performance of critical systems: simulation and enhanced performance for architectures, networks, protocols, embedded applications...
 - Technical support and training



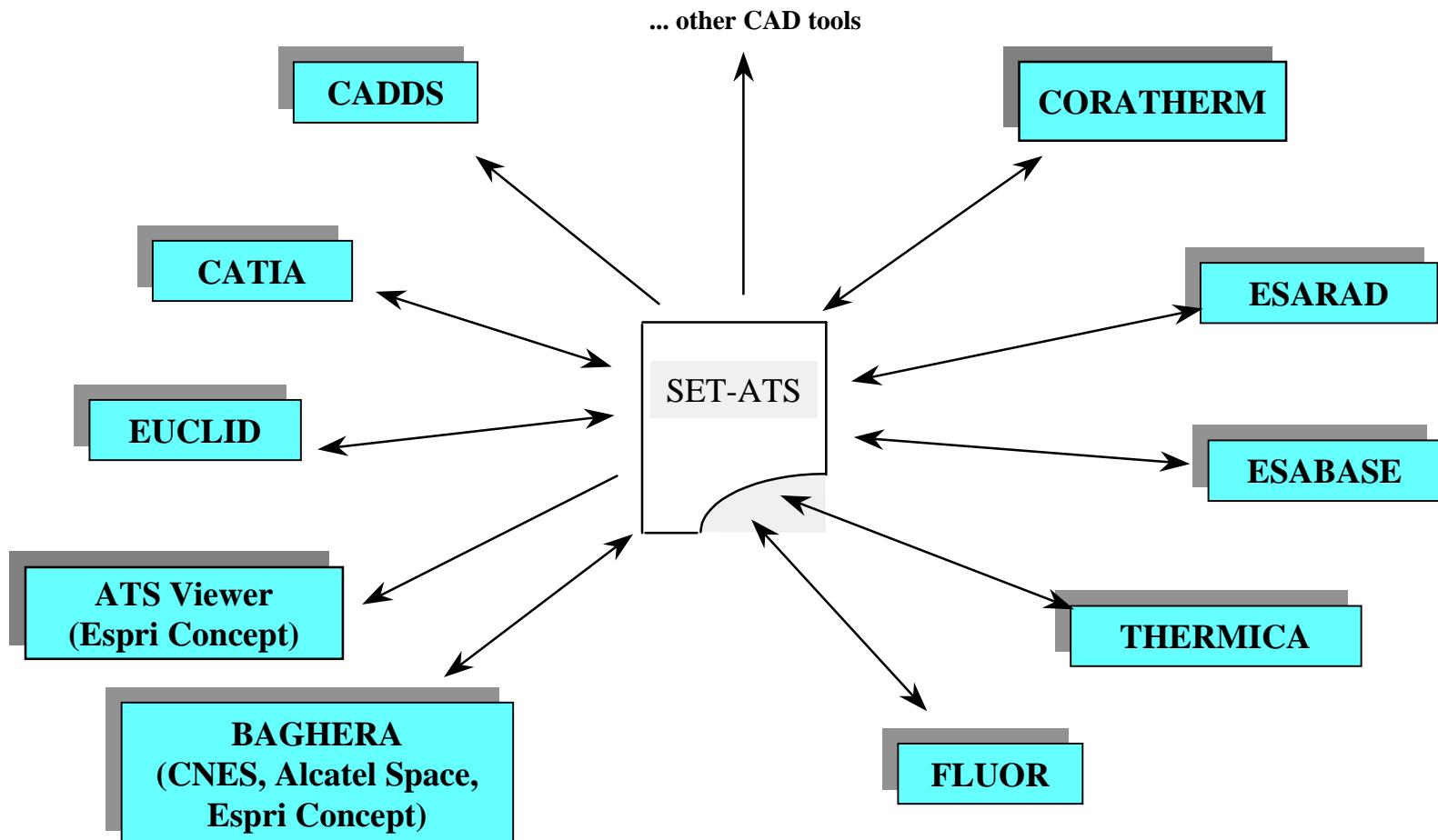
Yesterday's situation in European space thermal analysis data exchange



1995 : the beginning of a solution with SET (French Standard - CNES Initiative)



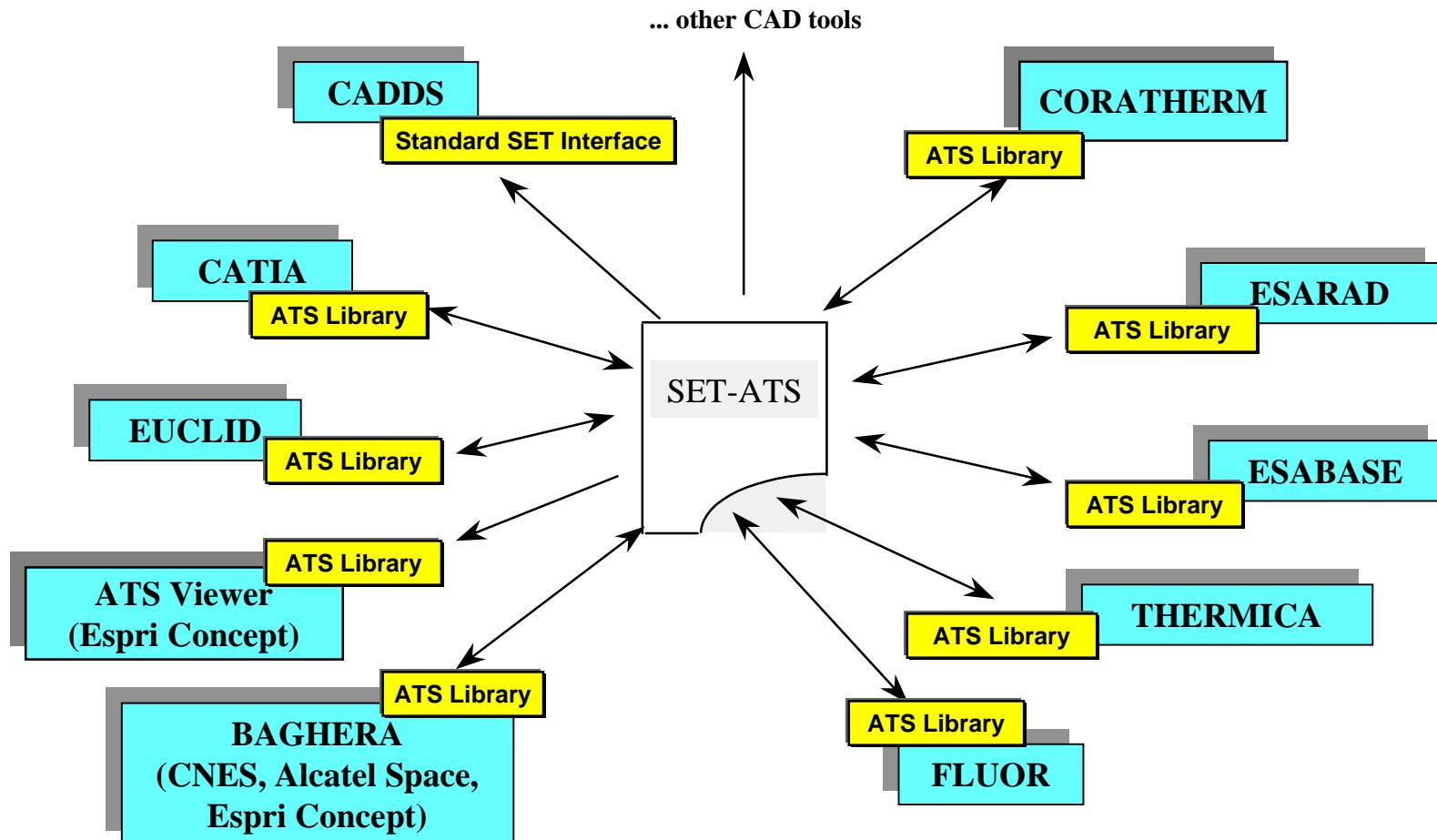
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Good exchange reliability with common import/export libraries



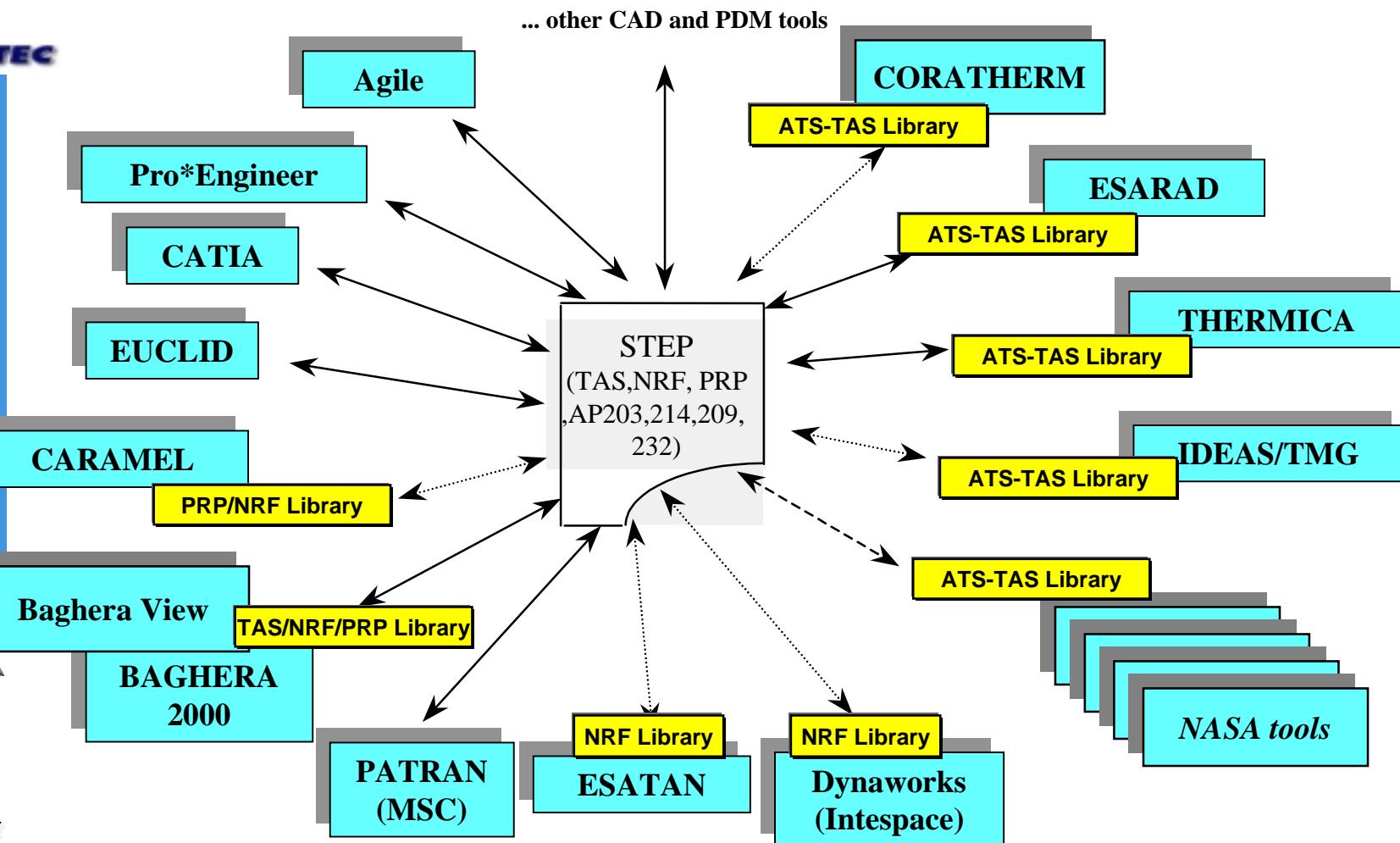
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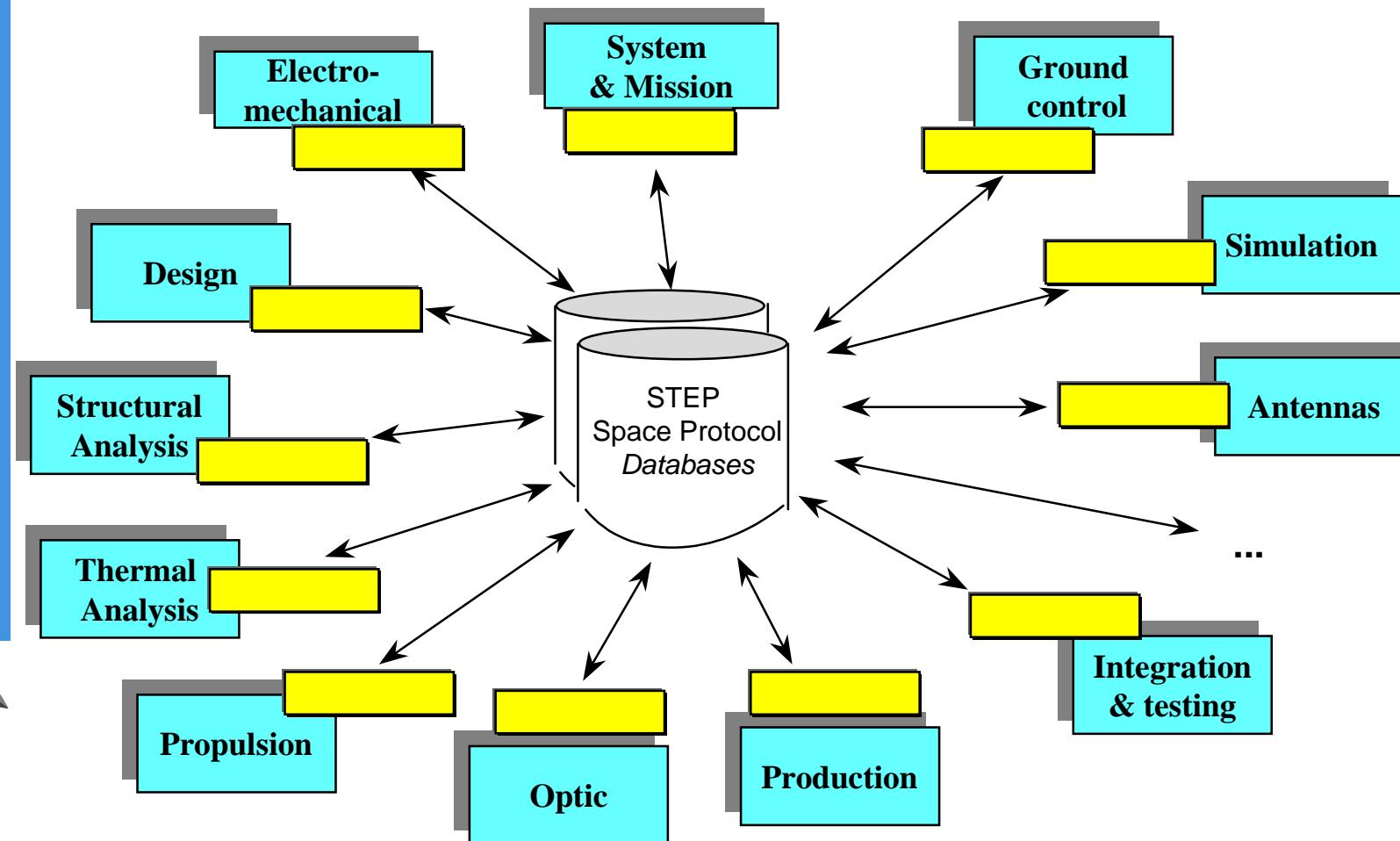
Starting today : more exchange with STEP (ISO 10303)



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Starting today : data integration around federated databases (CORBA)

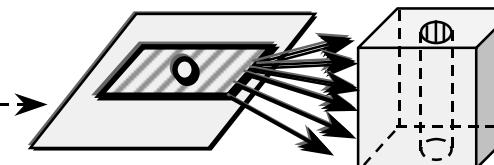
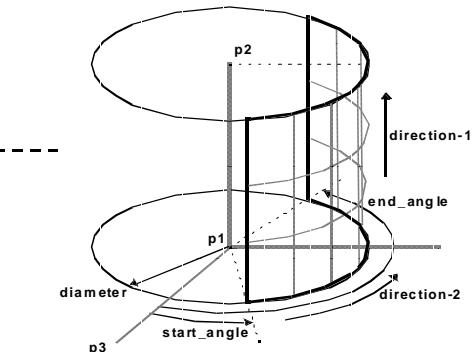
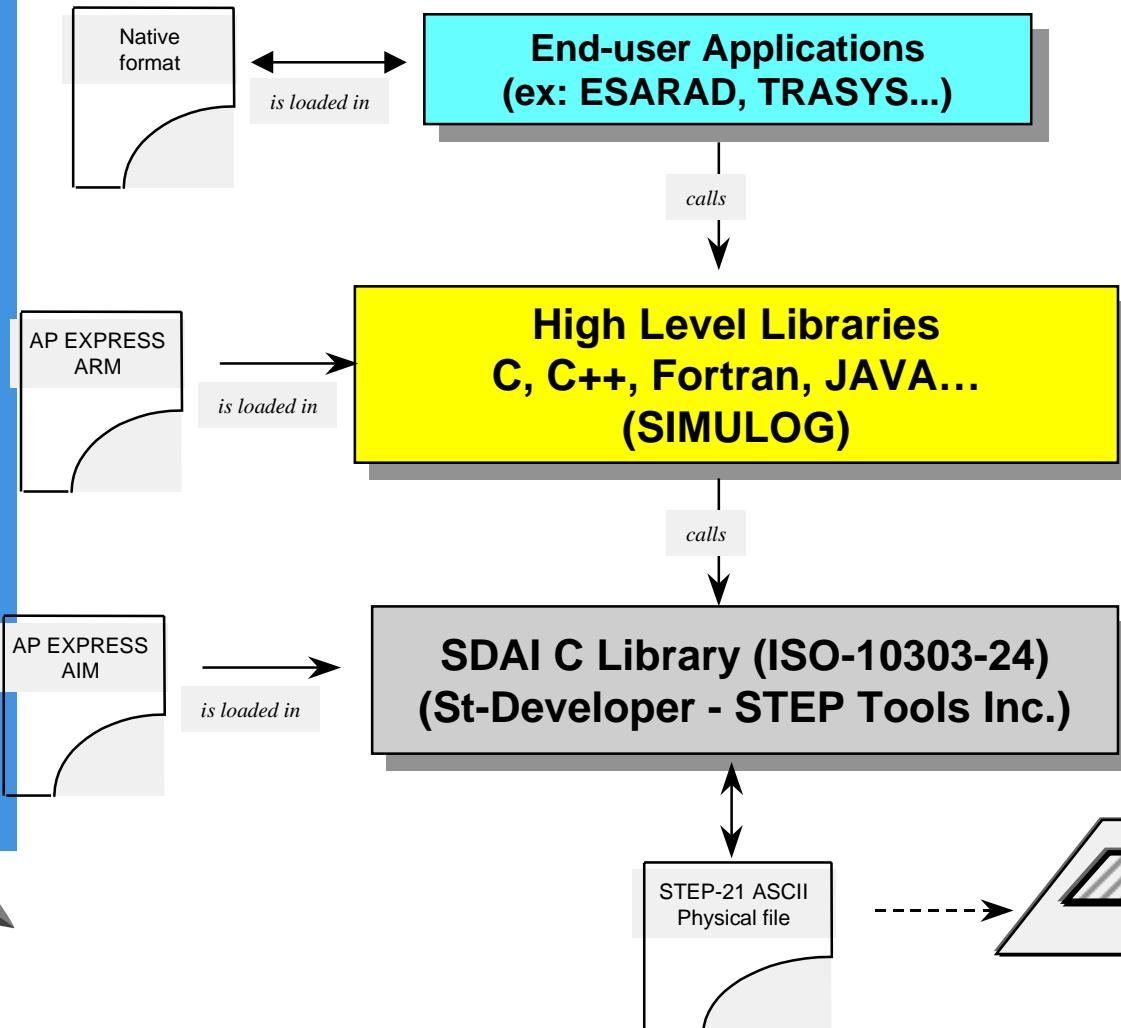


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Benefits of High Level Libraries Approach

- Application high-level specifications (ARM)
 - hide the STEP complexity
- reading/writing in the AIM format.
 - Conform to the standard
- At the disposal of interface developers
 - faster interfaces development
- all the interfaces share the same reading/writing module
 - reliability
- it's possible to change the AIM format by "re-linking" interfaces with some new libraries. (ex: STEP->HDF or STEP->XML or CORBA)
 - extensibility

High Level Libraries

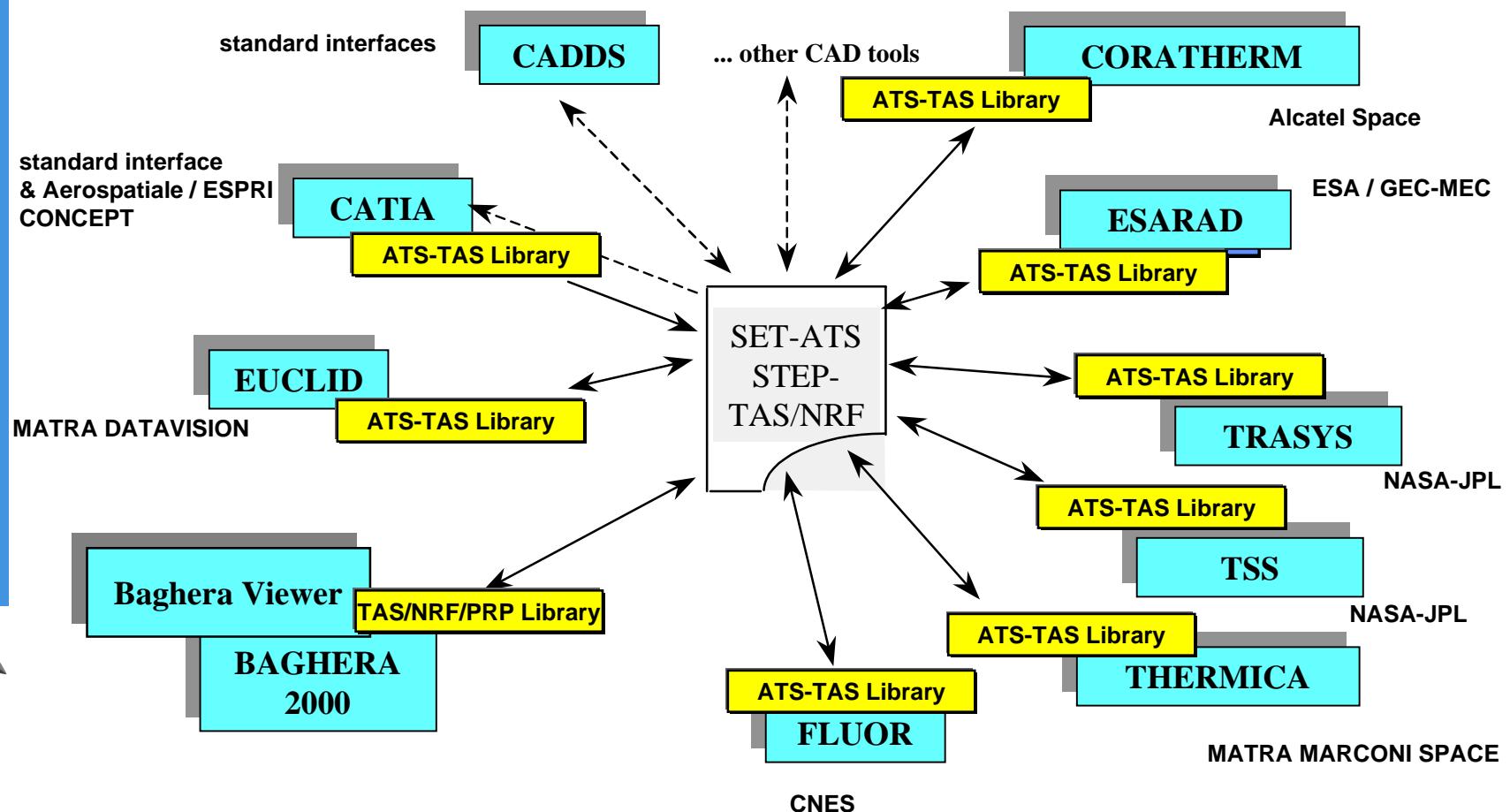


→ Hide the STEP complexity



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STEP-TAS Libraries distribution



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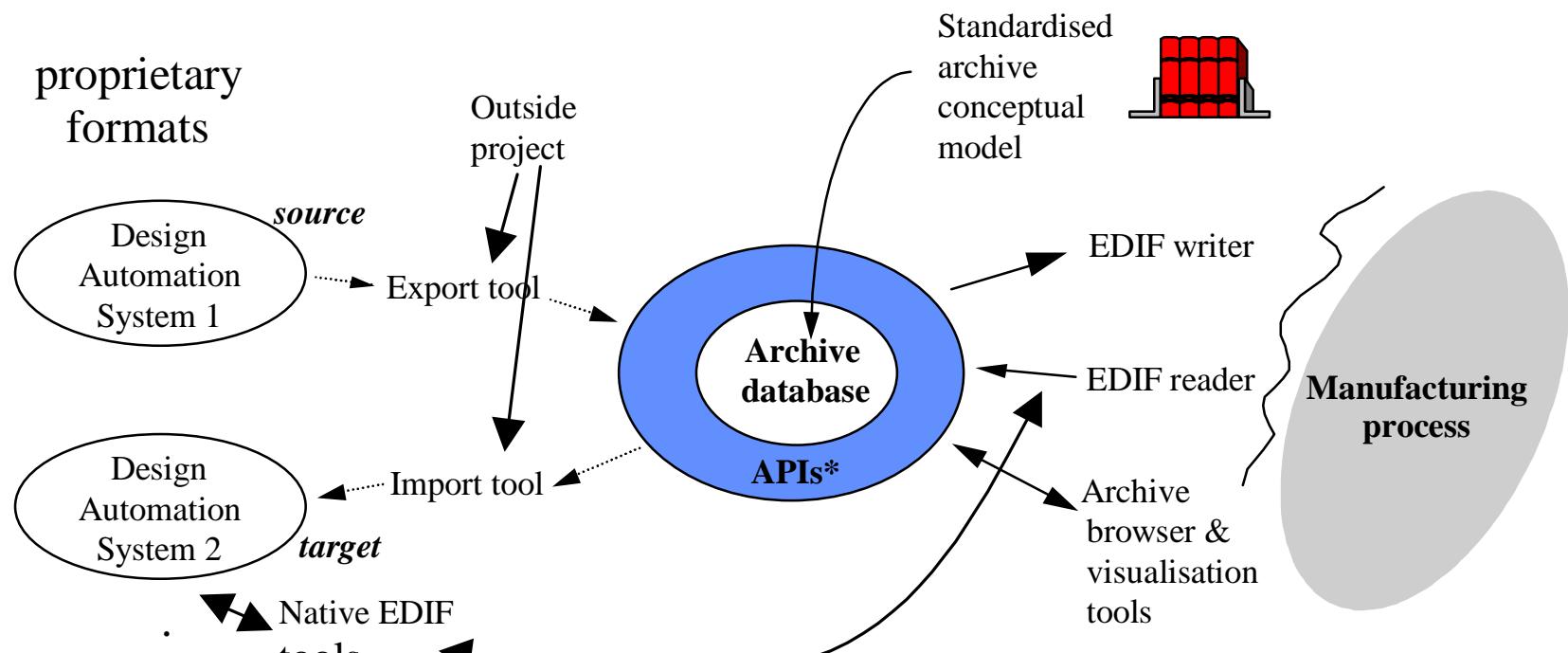
Other libraries

- STEP-NRF : Network based model Result Format (ESA, CNES, EDF...).
 - HDF extension
- STEP-PRP : Space propulsion system (CNES)
- ARCHIVE API : ECAD exchanges with STEP-EDIF and HDF
- Baghera Exchange : AP232 Java early binding (JDBC + ORACLE) (CNES, Alcatel Space)



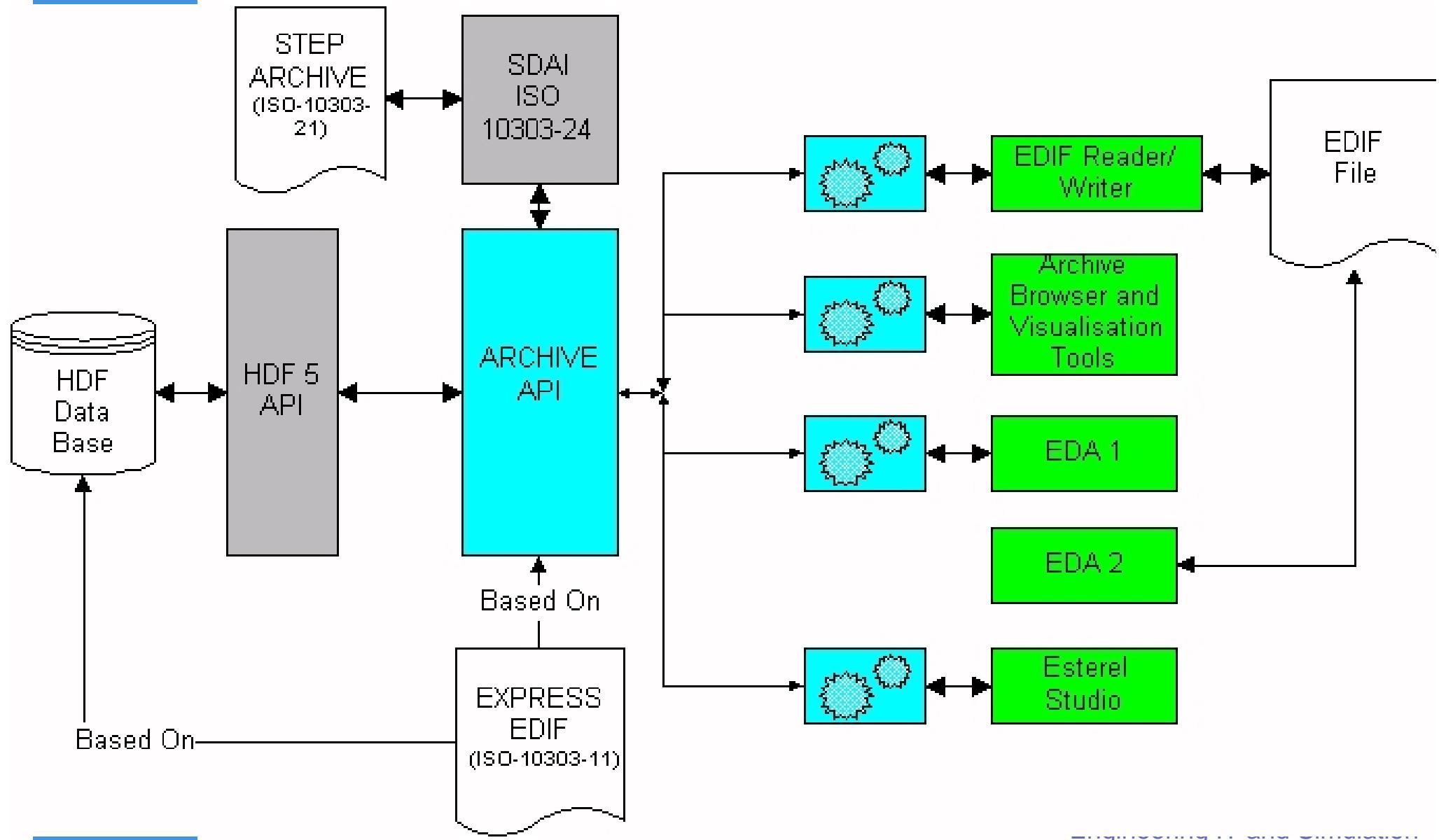
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ARCHIVE European Project ECAD exchanges (Cadence, Mentor...)

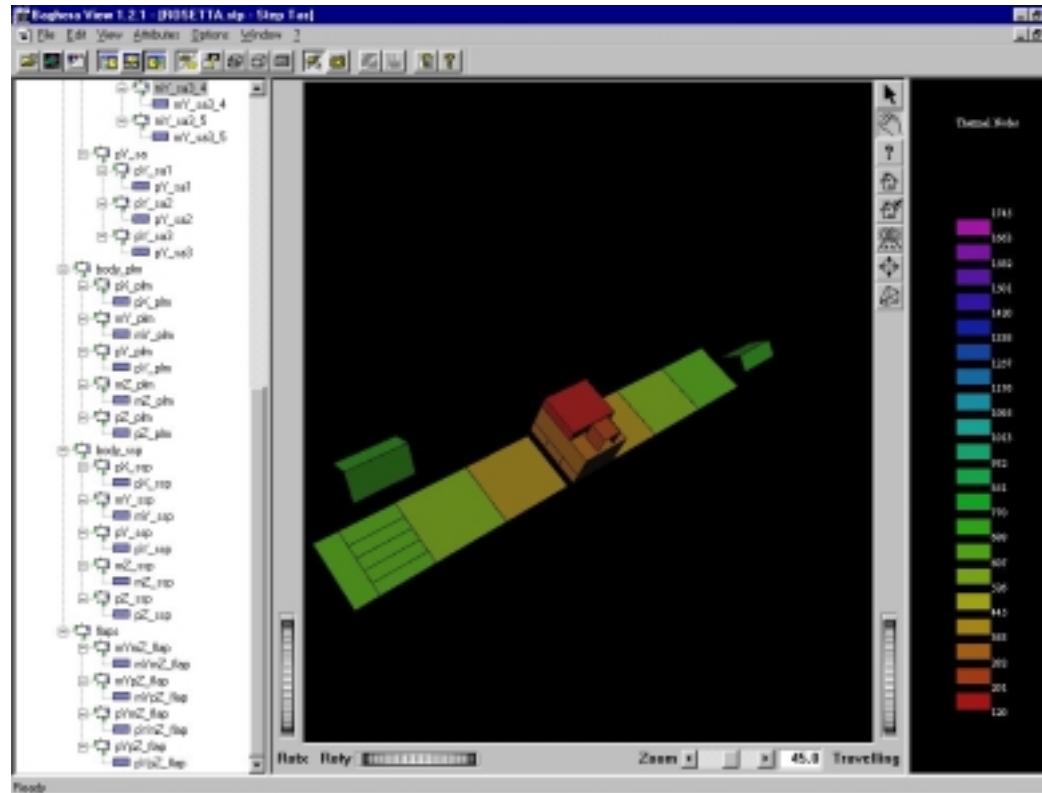


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The ARCHIVE API



Baghera View (STEP-TAS)



- Exchange checking, technical data reporting, data-warehouse viewer, properties edition...

Technical reporting on analysis model

1. General properties

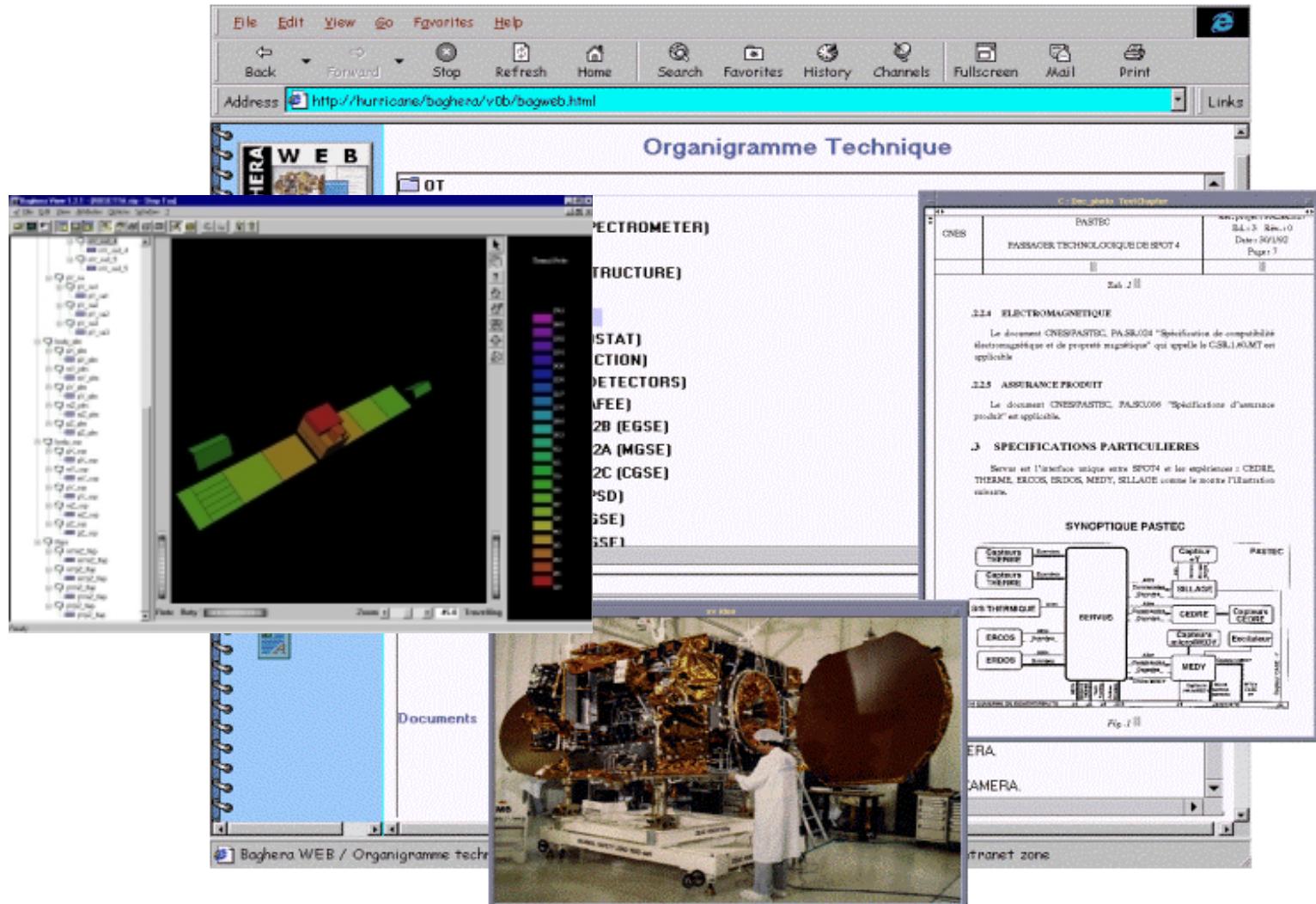
1.1 Introduction

Author : Pullet
Company : CNES
Address : Toulouse
Service : Thermal
Project : ROSETTA



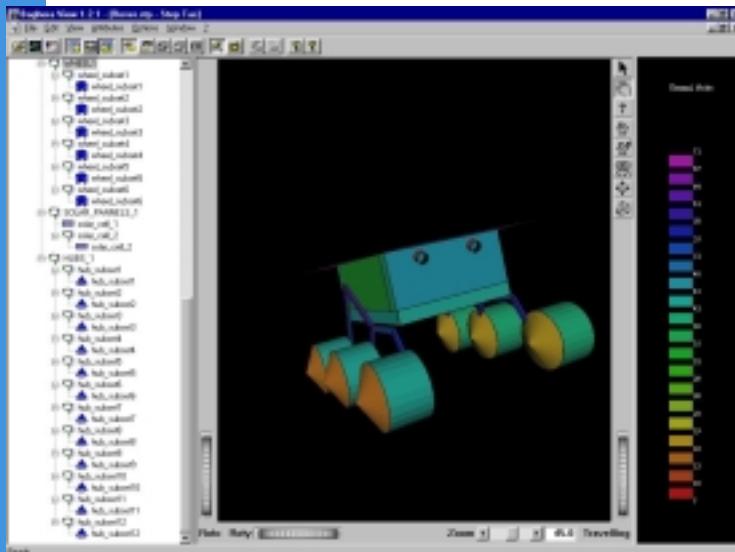
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Viewer for EDMS system based on STEP



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Current study : The STEP Space Viewer



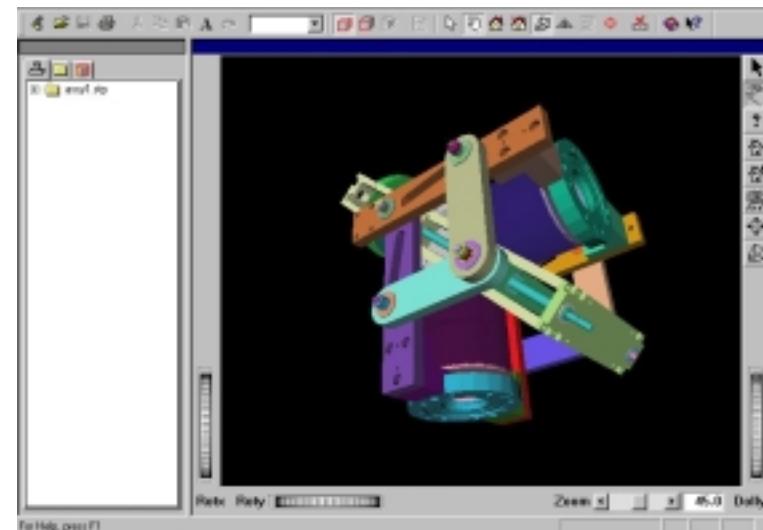
■ BAGHERA View

- STEP-TAS, STEP-NRF, STEP-PRP, other space specific STEP engineering analysis protocols

+

■ St-Viewer

- AP203, 214, and other ISO protocols



 **STEP Tools, Inc.**



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Summary

- High Level Libraries for
 - hiding STEP complexity
 - faster and more reliable interfaces development conform to the standard
 - extensibility to new formats (HDF, XML, CORBA...)
- STEP Space Viewer for
 - CAD and analysis exchange models checking
 - space specific technical properties display
 - technical report editing
 - viewing contents of EDMS based on STEP